Image by Jeff Jeanes

Calochilus campestris

copper beard-orchid

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Scientific name: ***Calochilus campestris*** R.Br., *Prodr.* 320 (1810)
Common name: copper beard-orchid (Wapstra et al. 2005)
Group: vascular plant, monocotyledon, family **Orchidaceae**

Status: *Threatened Species Protection Act 1995*: **endangered**
Environment Protection and Biodiversity Conservation Act 1999: **Not listed**

Distribution: Endemic status: **Not endemic to Tasmania**
Tasmanian NRM Region: **North**

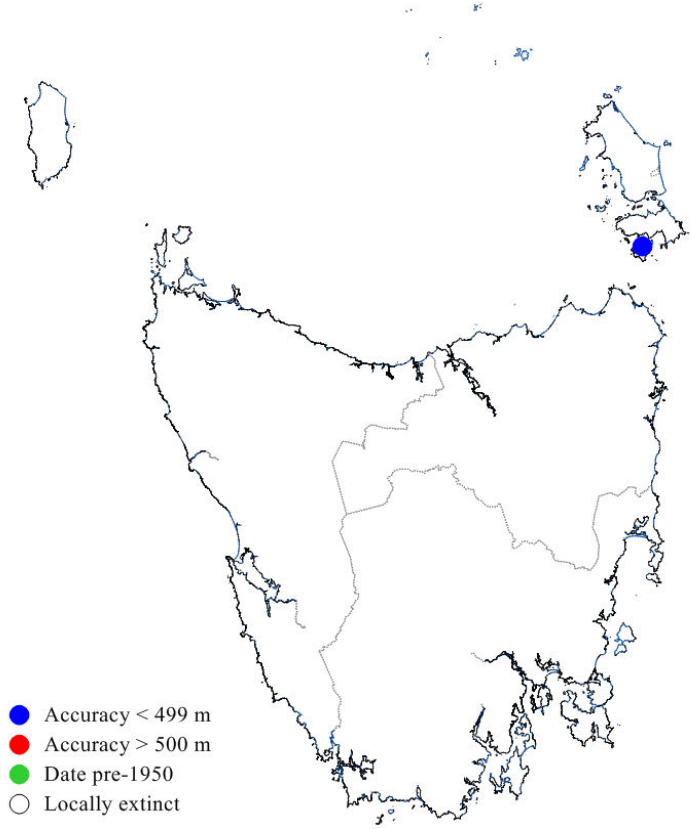

Figure 1. The distribution of *Calochilus campestris* within Tasmania

Plate 1. *Calochilus campestris* flower from Stony Point in Victoria (image by Jeff Jeanes)

IDENTIFICATION AND ECOLOGY

Calochilus species are deciduous terrestrials with large, somewhat irregular tubers and a single erect basal leaf that is three-cornered in cross-section. The flowers are dull and respond to sunshine in a similar way to the sun-orchids (*Thelymitra* species), with the perianth segments expanding widely or even reflexing on hot sunny days but they do not close again at night. The dorsal sepal hoods the central part of the flower and the lateral sepals are divergent beside the labellum. The short petals are asymmetric and have an unusual hooked apex. The most striking feature of the flowers is the large hairy labellum that gives the common name of beard-orchids. The labellum is covered with colourful calli, plates and coarse hairs (alluding to a beard). The short column often has spots that resemble eyes (so-called "sham eyes") and a coloured frontal ridge.

Flowers of *Calochilus* species are pollinated by male scoliid wasps of the genus *Campsomeris*, which are attracted to the flowers by the scent that mimics the pheromones of the female wasp. The hairy labellum with a pair of glossy eye-like glands at the base is thought to resemble the shape of the female wasp and act as a visual stimulus. Pollination is achieved when the male wasp attempts to mate with the labellum but self-pollination is common in beard-orchids if the flowers are not visited by wasps (Bower & Branwhite 1993, Jones et al. 1999). Recruitment is from seed and, as for all orchids, germination and growth is dependent on mycorrhizal fungi.

The flowering period of *Calochilus campestris* is September to January, based on mainland subpopulations (Jones 2006) but in Tasmania its only known collection was on 12 November 1979, so late October to early December is the likely flowering period in this State and the recommended timing for surveys (Wapstra et al. 2008).

Calochilus campestris is likely to respond to hot summer fires in a similar manner to other species of *Calochilus*, which generally flower in large numbers in the first few years immediately after an intense fire. However, while *Calochilus* species are often found in burnt sites, they do not require fire to flower and some species may be inhibited by fire for one or two seasons after summer fires. Species of *Calochilus* often colonise disturbed ground and Jones (1998) reports this for *Calochilus campestris* in southern Victoria.

Description

Calochilus campestris plants are 30 to 60 cm tall with a stout green stem. The leaf, which is fully developed at flowering, is 15 to 35 cm long and 10 to 15 mm wide, three-cornered in cross-section and dark green with a red base. The inflorescence has 2 to 15 flowers that open widely with the segments spreading, and are 25 to 30 mm long and 16 to 20 mm wide. The dorsal sepal is ovate, hooded or spreading, 9 to 12 mm long and 6 to 7 mm wide. The lateral sepals are oblong-lanceolate, deflexed and divergent, 9 to 12 mm long and 5 to 6 mm wide. The petals are ovate, 6 to 8 mm long and 4 to 5 mm wide. The labellum is ovate, curved, 14 to 16 mm long and 6 to 7 mm wide. The basal part of the labellum is completely covered with 2 smooth raised metallic blue plates and the central part is densely covered with bristly hairs. The margins of the labellum have short, pale, often glandular lobes to 5 mm long. The apical part of the labellum has a glandular tail 4 to 5 mm long and 1 mm wide. The column is 5 to 6.5 mm long and 4 to 4.5 mm wide, with a purple gland at the frontal base of each wing, not connected by a frontal ridge.

[description from Jones *et al.* 1999, Jones 2006]

Confusing species

Calochilus campestris is easily confused with *Calochilus herbaceus* (Jones et al. 1999) but can be distinguished by its large flowers (to 30 mm long rather than less than 20 mm long) and its well developed leaf (to 30 cm long rather than much reduced to only 10 cm long).

DISTRIBUTION AND HABITAT

Calochilus campestris occurs in Queensland, New South Wales, Victoria and northeastern Tasmania. Within Tasmania it is only known with certainty from a single 1979 collection from Clarke Island (Table 1, Figure 1). A report from mainland Tasmania was also made some time prior to 1832 (Table 1).

Table 1. Population summary for *Calochilus campestris* within Tasmania

	Subpopulation	Tenure	NRM Region *	1:25000 Mapsheet	Year last seen	Area occupied (ha)	Number of mature plants
1	Near Sandy Lagoon, Clarke Island	Aboriginal land	North	Preservation	1979	0.001 (10 x 10 m)	1-3?
2	Mainland Tasmania#				pre-1832	Presumed extinct	

*NRM region = Natural Resource Management region

Based on discussion in Jones (1998), which relates the veracity of the living plant used to illustrate *Calcochilus campestris* in *Curtis's Botanical Magazine* Volume 6 (1832) by William Gould as coming from Tasmania, using hand-written annotations by William Hooker ("Our drawing was made from the living plant in Van Dieman's Land")

The habitat of *Calochilus campestris* on mainland Australia is described as swamps and moist depressions in heathland, heathy forest and buttongrass moorland in grey to black sand and peaty sand (Jones 1998). The species is known to colonise embankments and road verges (Jones 1998). The precise habitat of *Calochilus campestris* on Clarke Island is not known but is presumably similar to that of mainland Australia.

POPULATION ESTIMATE

There is no reliable population estimate available for *Calochilus campestris*. The only formal recording of the species in Tasmania is from 1979, represented by a single collection of a single plant although the exact site of collection is imprecisely known. Anecdotal information suggests the site may have supported between 1 and 3 individuals. An extensive search of suitable habitat around Sandy Lagoon in 1998 failed to locate *Calochilus campestris* although *Calochilus herbaceus* was found. While it is uncertain if the subpopulation found in 1979 is still extant, the fact that parts of the Sandy Lagoon survey area had been burnt close to the survey time (which should have promoted flowering), suggests that the species may be best regarded as presumed extinct in Tasmania.

Calochilus campestris was only confirmed for Tasmania by Jones (1998) from herbarium material collected from Clarke Island by John Whinray in 1979. Records of *Calochilus campestris* sensu Curtis (1979) have all proven to be *Calochilus herbaceus*. Tasmanian field workers have long known of the possible existence of *Calochilus campestris* in Tasmania (in fact the species was first illustrated from a living plant on the Tasmanian mainland in 1832) and this led to numerous specimens being submitted for specialist identification, all of which proved to be *Calochilus herbaceus*. Therefore, while there may be large expanses of potential habitat, *Calochilus campestris* may have a highly restricted distribution in Tasmania.

RESERVATION STATUS

Calochilus campestris is not known from reserved land.

CONSERVATION ASSESSMENT

Calochilus campestris was listed in 2001 as endangered on schedules of the Tasmanian *Threatened Species Protection Act 1995*. It meets criterion B because there are fewer than 250 mature individuals and its range is severely restricted (it occupies less than 1 hectare, and it occurs in only 1 subpopulation). If the species is not re-discovered in the next 20 years, it would qualify as presumed extinct because it will not have been observed in the wild for 50 years.

THREATS LIMITING FACTORS AND MANAGEMENT ISSUES

It is possible that the Clarke Island site represents the southern limit of the distribution of *Calochilus campestris* and that it was never widespread and/or common on the island (or elsewhere in the Furneaux Group). However, it is possible that there were (perhaps still are) other subpopulations elsewhere in the Furneaux Group in similar habitat. The species was also recorded on mainland Tasmania from an unknown location but has not been recorded there since the 1830s.

While possibly extinct in Tasmania, *Calochilus campestris* is a widespread and often locally common species on mainland Australia yet the closely related *Calochilus herbaceous* is a Tasmanian endemic (Jones 2006). This suggests that Tasmanian records of *Calochilus campestris* represent the last vestiges of the differentiation process between mainland Australia and Tasmania. It is also possible that the Tasmanian records were of variants within subpopulations of *Calochilus herbaceous.*

With only one formally recorded site, now presumed to be extinct, it is difficult to identify specific threats to *Calochilus campestris* though it is possible to identify some generic threats, which are probably applicable to many threatened orchid species.

Clearing of potential habitat: Clearing of offshore island vegetation in the Furneaux Group may result in the further loss of potential habitat for *Calochilus campestris*.

Inappropriate fire regime: The flowering of *Calochilus campestris* is likely to be enhanced by summer fires. However, fire management in the vicinity of the location of *Calochilus campestris* or potential habitat elsewhere on Clarke Island is likely to be focused on preventing the type of fires that are suitable for enhancing flowering (i.e. summer fires of relatively high intensity). A more frequent lower intensity fuel reduction fire regime is unlikely to benefit the species and in the long term may reduce habitat quality. The fires that occurred around 1995 on Clarke Island in the vicinity of the original collection site did not appear to promote flowering of *Calochilus campestris*, although *Calochilus herbaceus* and other orchids were common.

Inappropriate grazing regime: The only formally recorded site of *Calochilus campestris* occurs on an island used, at least in part, for cattle grazing. Uncontrolled grazing is likely to deleteriously impact the species i.e. intensive grazing that results in removal of fertile plants and disturbance to the tubers.

MANAGEMENT STRATEGY

The development of a management strategy for *Calochilus campestris* is limited by the imprecise location details of the only formally recorded site and the possible extinct status of the species in Tasmania.

What has been done?

Numerous searches have been conducted for *Calochilus campestris* though the species has not been found in Tasmania since 1979.

Calochilus campestris was formally included in the *Flora Recovery Plan: Threatened Tasmanian Orchids 2006–2010* (TSU 2006).

Management objectives

- refind the species

While the available evidence suggests that *Calochilus campestris* may be extinct in Tasmania, the possibility of re-discovering the species should not be discounted, considering the recent re-discoveries of several plant species in Tasmania (e.g. Wapstra et al. 2006, Bonham 2008).

What is needed?

- undertake surveys for the species in potential habitat (heathland, heathy forest and buttongrass moorland in grey to black sand and peaty sand in the Furneaux Group and possibly the northeastern coast of mainland Tasmania) during the predicted flowering period (late October to early December);
- continue to assess the Clarke Island site and nearby similar habitat during the week or two either side of 12 November;
- undertake extension surveys of potential habitat 1 to 3 flowering seasons after high intensity summer fires.
- should the species be rediscovered, manually pollinate flowers, protect them from browsing and if sufficient fertile material is available, collect seed and mycorrhizal fungi for long-term storage at the Tasmanian Seed Conservation Centre,

and propagation, to supplement the population *in situ* and/or *ex situ* with seedlings;

- provide information and extension support to the Northern Natural Resource Management committee, the Aboriginal community, local councils, government agencies and the local community on the locality, significance and management of known subpopulations and potential habitat;
- implement the threatened orchid Recovery Plan (TSU 2006) and include the species in any revision of the Plan.

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Permit: It is an offence to collect, disturb, damage or destroy this species unless under permit.